

PREVENTIVE MEASURES TO PREVENT POLLUTION OF THE ENVIRONMENT WITH PESTICIDES

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Resume

Based on the conducted research, the safety of the use of the new insecticide Seller in agriculture was established. Scientifically substantiated the maximum permissible concentration of insecticide in atmospheric air, air of the working area, in the soil. Approximately permissible concentration of the drug in products of plant origin, in the water of water bodies has been developed.

Keywords: Seller, toxicity, hygiene regulations

Relevance. Taking into account the complex and rapid methodology of pesticides in the environment (2015) and the maximum permissible level of the drug in food products, its intended permissible concentration (MREK) in the soil was set at 0.2 mg/kg.

As a result of the analysis of the chemical structure and biological activity of synthetic pyrethroids, it was concluded that the exchange of the ethyl group in the 4th and 6th chain of their chemical structure with a methyl group increases the level of toxicity and biological activity of pesticides.

Duration of storage of synthetic pyrethroids in the soil, their movement in the soil layer, and the degree of transfer to the above-ground part of the plant depend on the climatic and geographical conditions of the region, the amount of their use, the type and humidity of the soil, and other factors. Persistence of pesticides in the soil, movement in its layers, accumulation, the level of transition of plants to the surface of the ground were studied in the soil-climatic conditions of our republic (fine-grained yellow soil, fine-grained gravelly yellow soil). First, the level of air pollution of workplaces and atmospheric air during the treatment of agricultural crops with pesticides is assessed. Grain fields are divided into experimental sections (experimental and control) and studied. Based on the above, it can be concluded that when pesticides are used in agriculture, atmospheric air is polluted with chemicals.

The higher the amount of pesticide used, the stronger its movement in the soil layer. When the pesticide was used in the amount of 0.1 and 0.2 kg/ha, the pesticide was detected in the amount of $0.02 \pm 0,002$ and 0.03 mg/kg in the depth of 10-20 cm, and in the amount of $0.01 \pm 0,002$ and 0.02 mg/kg in the $\pm 0,001$ depth of 20-30 cm $\pm 0,001$. The behavior of pesticides in the soil layer was also investigated in fine-grained gravel soil.

After 60 days, when pesticides were used in the amount of 0.01 kg/ha in the soil conditions, no residues were found in any layer of the soil.

The pesticide used in the amount of 0.02 kg/ha of the drug was detected only in the surface part of the soil (0-10 cm) $\pm 0,002$ in the amount of 0.02 mg/kg.

When increasing the amount of pesticide use to 0.05 kg/ha, the drug acts on the next part of the soil (10-20 cm) and 20-30 cm layer.

When pesticides were used in the amount of 0.04 kg/ha, it was noted that they reached the soil by 20-30 cm. In this case, $0.3 \pm 0,02 \text{ mg/kg}$ and $0.02 \pm 0,002 \text{ mg/kg}$ were stored in the 0-10 cm layer of the soil for 10-60 days, and 0.04 and 0.01 mg/kg in 20-30 cm of the soil from 10 to 20 days ($0.04 \pm 0,06$ and $0.01 \pm 0,003 \text{ mg/kg}$, $r \leq 0.05$).

When increasing the amount of pesticide use to 0.04 kg/ha, it was noted that the drug reached the 20-30 cm layer of the soil. For example, when the drug is used in the amount of 0.04 kg/ha, the drug remains in the 0-10 cm layer of the soil for 10 to 60 days ($0.3 \pm 0,02$ - $0.02 \pm 0,002 \text{ mg/kg}$) and in the 20-30 cm layer for 10-20 days ($0.02 \pm 0,002$ - 0 It was determined in the amount of $0.01 \pm 0,001 \text{ mg/kg}$).

When the pesticide is used in the amount of 0.05 kg/ha, it was determined that the drug remains in the soil for 10-20 days from 10 to 60 days, and in the 20-30 cm layer from 10 to 30 days. Such regularity occurred when the pesticide was used in the amount of 0.1 and 0.2 kg/ha.

When pesticides are used in the amount of 0.1 kg/ha, in 0-10 cm of soil from 10 days to 90 days ($\pm 0,006$ 0.6-0.02), in 10-20 cm layer $\pm 0,003 \text{ mg/kg}$ from 10 days to 90 days ($\pm 0,005$ 0.6-0.01 $\pm 0,003 \text{ mg/kg}$), in 20 cm layer It was determined from 10 days to 90 days ($0.05 \pm 0,006$ - $0.01 \pm 0,002 \text{ mg/kg}$).

When the pesticide was used in the amount of 0.2 kg/ha, its residue $\pm 0,002 \text{ mg/kg}$ was determined in the amount of 0.01 in the clean part of the soil - 0 - 10 cm in 115 days. The pesticide was detected in the amount of 0.05-0.01 $\pm 0,003 \text{ mg/kg}$ in the 10-20 cm layer of the soil for 10-90 days , and $\pm 0,006$ 0.05-0.01 $\pm 0,002 \text{ mg/kg}$ in the 20-30 cm layer $\pm 0,006$

Therefore, when pesticides are used in agriculture, the residue of the drug in water bodies, atmospheric air, workplace air, soil and food products should not exceed the high hygienic standards.

Wheat flour containing residues of pesticides is recommended to be consumed only after heat treatment .

Comparing the chemical structure of synthetic pyrethroids with their toxicity and biological activity, their toxicity and environmental resistance increase when the isopropyl group in the fourth and sixth position of the chemical chain is replaced by an amine group. Such characteristics should be taken into account in the standardization and regulation of new pesticides. Regulation of the use of new pesticides in agriculture is carried out at the stage of preventive sanitary control.

Comparing the chemical structure of synthetic pyrethroids with their toxicity and biological activity, their toxicity and environmental resistance increase when the isopropyl group in the fourth and sixth position of the chemical chain is replaced by an amine group. Such characteristics should be taken into account in the standardization and regulation of new pesticides. Regulation of the use of new pesticides in agriculture is carried out at the stage of preventive sanitary control.

Main measures:

1. Replacement of substances of the first class of danger and restrictions of the second class for less dangerous and toxic ones, as well as persistent and highly concentrated pesticides.

Regulation of the introduction of new pesticides to agriculture should be carried out at the stage of preventive sanitary control.

After the positive decision of the Ministry of Health of the Republic of Uzbekistan, it is recommended to include pesticides in the list of chemical and biological means for combating pests, plant diseases and weeds. The list is valid for a certain period (up to 5 years) and then it is reviewed again. If necessary, additions and changes are made to it. This list is organized as follows: the level of pesticide consumption per hectare, which indicates the agricultural crops on which the pesticide can be used and the harmful effects, and the maximum frequency of processing.

2. Regulation of methods of application, i.e., this introduction is allowed: assessment of forms and methods of processing, development of REK amounts, sanitary protection zones, quarantine periods, methods and means of personal protection, dosages and periods of processing, etc. The need to use pesticides in each individual case must be strictly justified by plant protection experts. Only pesticides approved by the "List" are allowed to be used. All pesticide treatments are recorded in a special log book. Development of criteria for early exposure of pesticides to the human body in a single unified control system plays a major role in their use.

3. When using pesticides, give instructions on their properties (physical, chemical properties, degree of toxicity, level of resistance), instructions for workers, precautions, measures to prevent pollution of food, atmospheric air and water bodies. The responsibility for labor protection and safety measures is assigned to the managers of the enterprise. The list of those who work with pesticides on farms is approved by order.

4. Strengthen control over the observance of sanitary regulations on the storage, transportation and use of pesticides, the maintenance of work and rest procedures of workers. The duration of the working day with pesticides should not exceed 6 hours. Depending on the class of danger, warning colored lines should be applied to the tares:

1st class-red line;

2nd class-yellow line;

3rd class-blue line;

4th grade-green line.

5. Mechanization of fueling operations and preparation of working preparative forms of pesticides, improvement of pesticide application technology.

6. Ventilation of warehouses, cabins of airplanes and tractors.

7. Equipment of sanitary-household equipment (no more than 200m from the place of working with pesticides), strict observance of personal hygiene rules.

8. Provision of personal protective equipment (PPE) at all stages of work. Respirators with dust flaps or other respirators when using non-volatile preparations for respiratory protection. Outerwear: coveralls and goggles should be used when working with dusty substances. Personal protective equipment must be disinfected after work.

9. Protection of the population and objects of the external environment:

A) inform the population (not later than 2 days);

B) having recognizable signs in processed areas;

C) existence of a sanitary protection zone.

Sizes of sanitary protection zones: for temporary warehouses - 200m, during fumigation - 200m, when using drugs of the III and IV hazard classes - from 50 to 500 meters;

G) application of pesticides taking into account the wind speed: in underground works, the speed does not exceed 4 m/s - in large droplet spraying, in small droplet spraying - 3 m/s. Pesticides that are very persistent when applied to the soil can be applied in one plot no more than once every 3 years.

10. "Observance of quarantine conditions and other rules (time and method of processing, its frequency, processing period) specified in the list."

11. Systematic analysis (REK) for the study of pesticides in working area air and atmospheric air and comparison with hygienic norms.

12. Conducting preliminary and periodical medical examinations (in accordance with order No. 300 of the Ministry of Health of the Republic of Uzbekistan). Specialists: therapist, neuropathologist, ophthalmologist, otolaryngologist, dermatovenerologist, obstetrician-gynecologist and dentist when working with mercury organic pesticides. Analyzes (once every 12 months): blood cholinesterase activity (when working with FOS and carbamates); mercury in urine (when working with mercury organic pesticides); methemoglobin, general analysis of urine (when working with all pesticides). Providing medical assistance in working with pesticides.

13. The work of pregnant and lactating women is prohibited. Persons under the age of 18 are not allowed to work with pesticides.

14. Hygienic training of workers.

15. In order to maximally reduce the amount of pesticides in food products, optimal periods of processing of agricultural crops have been developed, based on which the degradation of pesticides occurs during the time of consumption of the product.

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